

Work Order ID 91335

91335

U/R

Page 1

Item ID: D350-748-101

Accept

N9000040100

Setup Start *NS1*

Revision ID: U/R

Stop *NS2*

Item Name: Crosstube Installation. High Fwd

Start Date: 04/10/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/10/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: *P*

Date: *12-10-4*

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D350-748-141

F U/R OK *12/10/10*

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile & type labels per PPPD350-748-101

CHG002

13-4-14

13-4-15

110

0.00

110

BENDING MACHINE - CROSSTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

Bend tube as per Dwg D350-748-141 using CNC bender program D350F and Folio FT

****UNDER BEND .225" PER SIDE****

****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****

12-12-18

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY				
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other	

Work Order ID 91335

October-05-12 9:13:12 AM

91335

Page 2

Item ID: D350-748-101

Accept

N900040100

Setup Start ***NS1***

Revision ID: U/R

Stop ***NS2***

Item Name: Crosstube Installation, High Fwd

Start Date: 04/10/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/10/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC15- Crosstube Dimensional Check	0.00							
120	QC6	0.00							
QC	Memo								
Quality Control	***USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS***								

125 0.00

125

HandFXtube

Hand Finishing Crosstubes

Memo

0.00

Stress relief

Heat treat crosstube as per QSI010 4.3

Temp: _____

Start time: _____

Finish time: _____

127 0.00

127

QC

Quality Control

QC6- Inspect dimensions to drawing

0.00

Memo

0.00

126

Receive + Inspect

Sp 12-12-31

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY			
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other

Work Order ID 91335

91335

October-05-12 9:13:12 AM

Item ID: D350-748-101

Accept

N900040100

Setup Start ***NS1***

Revision ID: U/R

Item Name: Crosstube Installation, High Fwd

Stop ***NS2***

Start Date: 04/10/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/10/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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130

0.00

130

Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Drill Tube as per Dwg D350-748-141 Using DT8876 A,B & C Drill Jigs,
Set-up drill table as per QSI 010

2-Deburr

3-Engrave Part # and Batch # as per Dwg D350-748-141

4-Remove all marks from tube within limits of D350-748-141

5- Apply a light coat of LPS3 on the interior of tube

Batch: 11/13

12-12-31

JW
Ren

13-1-3

140

QC5- Inspect part completeness to step on W/O

0.00

140

QC

Quality Control

Memo

0.00

CHECK 10 DEG HOLES WITH DT8876E (EUROCOPTER CLAMP)

DAS
15
9-89

13-1-3

DAS
16
8-89

17/1/13

J

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION <div style="display: flex; justify-content: space-around;"> <div>Rework <input type="checkbox"/></div> <div>Skid-tube <input type="checkbox"/></div> <div>Crosstube <input type="checkbox"/></div> <div>Water Jet <input type="checkbox"/></div> <div>Engineering <input type="checkbox"/></div> </div> <div style="display: flex; justify-content: space-around;"> <div>Scrap <input type="checkbox"/></div> <div>Machining <input type="checkbox"/></div> <div>Small Fab <input type="checkbox"/></div> <div>Prod. Eng. Coord. <input type="checkbox"/></div> <div>Quality <input type="checkbox"/></div> </div> <div style="display: flex; justify-content: space-around;"> <div>Use-as-is <input type="checkbox"/></div> <div>Thermoforming <input type="checkbox"/></div> <div>Finishing <input type="checkbox"/></div> <div>Rec/Store/Packaging <input type="checkbox"/></div> <div>Other <input type="checkbox"/></div> </div> <div style="display: flex; justify-content: space-around;"> <div>Work Order Update <input type="checkbox"/></div> <div>Large Fab <input type="checkbox"/></div> <div>Composite <input type="checkbox"/></div> <div>Supplier <input type="checkbox"/></div> </div>	
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Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator									
Material									
Setup									
Other									
Process									
Supplier									
Training									
Unapproved									

FAULT CATEGORY

Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions <input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other
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Work Order ID 91335

91335

Page 4

Item ID: D350-748-101

Accept

N900040100

Setup Start *NS1*

Revision ID: U/R

Stop *NS2*

Item Name: Crosstube Installation, High Fwd

Start Date: 04/10/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/10/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start *NR1*

QC: Date: SPC (Y/N): Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Outsource process-Cadplate per QSI017 4.1.9.1	0.00							
150									
Outsource3	Memo	0.00							
Outsource process - Cad plate	Issue P/O: 18651 Stress relief at 375° for 5 hours Magnetic Particle Inspect per ASTM E1444 Cadium Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375° for 8 hours, Chromate Treat Possible Supplier: Southwest United Industries Ensure Certificate of Conformity is attached		18743	CLB101107					
160	Receive & Inspect for Damage & Mat'l Certs	0.00							
160									
Packaging	Memo	0.00							
Packaging	Ensure certificate of conformity is attached								
170	QC5- Inspect part completeness to step on W/O	0.00							
170									
QC	Memo	0.00							
Quality Control									

~~CL 12/12/17~~

14/12/20 (2)

1x 8013-2-27. Pro

DAS 16 9-85 17/12/25

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: WJL Date: 13/05/05QA Closed: WJL Date: 13/4/23

Work Order: <u>91335</u>				DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Part No. <u>D350-748-101</u>				Rework <input checked="" type="checkbox"/>		Skid-tube <input type="checkbox"/>		Crosstube <input checked="" type="checkbox"/>		Water Jet <input type="checkbox"/>		Engineering <input type="checkbox"/>	
NCR No. <u>13-2532</u>				Scrap <input type="checkbox"/>		Machining <input type="checkbox"/>		Small Fab <input type="checkbox"/>		Prod. Eng. Coord. <input type="checkbox"/>		Quality <input type="checkbox"/>	
				Use-as-is <input type="checkbox"/>		Thermoforming <input type="checkbox"/>		Finishing <input type="checkbox"/>		Rec/Store/Packaging <input type="checkbox"/>		Other <input type="checkbox"/>	
				Work Order Update <input type="checkbox"/>		Large Fab <input type="checkbox"/>		Composite <input type="checkbox"/>		Supplier <input type="checkbox"/>			

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector	
Doc/Data <input checked="" type="checkbox"/>	<u>13/1/3</u>	<u>#12</u>	<u>#1</u>	Found after CAD plotting that machining marks were found at above the cuffs.	<u>GP</u> <u>13/4/1</u>	Return to CAD data. Items out marks ensure to be cautious of the edit. For CAD Rem. AC P/O	<u>GP</u> <u>13/4/1</u>	<u>DAS 16</u> <u>13/3/01</u>		
Equip/Tooling <input checked="" type="checkbox"/>						Grind out marks carefully not to touch the cuffs				<u>RM</u> <u>13-02-28</u>
Operator <input type="checkbox"/>						Return to CAD for Re CAD Plotting P/O <u>19238</u>				<u>GP</u> <u>13/3/01</u>
Material <input type="checkbox"/>										
Setup <input type="checkbox"/>										
Other <input type="checkbox"/>										
Process <input checked="" type="checkbox"/>										
Supplier <input type="checkbox"/>										
Training <input type="checkbox"/>										
Unapproved <input type="checkbox"/>										

FAULT CATEGORY									
Landing Gear			General			CRR <u>14/3/20</u>			
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Grain	<input type="checkbox"/> Ovalized	<input type="checkbox"/> Pressure/Forced	<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Hardware	<input type="checkbox"/> Over/Under tolerance	<input type="checkbox"/> Temperature/Cure
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damaged	<input type="checkbox"/> Inspection Incomplete	<input type="checkbox"/> Part Incorrect	<input type="checkbox"/> Weld	<input type="checkbox"/> Crushed/Crimped	<input type="checkbox"/> Burrs	<input type="checkbox"/> Instructions Incomplete/Unclear	<input type="checkbox"/> Part Lost/Missing	<input type="checkbox"/> Wrong Stock Pulled
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Part Moved	<input type="checkbox"/> Other	<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Countersink	<input type="checkbox"/> Misleading	<input type="checkbox"/> Positioned Wrong	
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Misread	<input type="checkbox"/> Power Loss/Surge		<input type="checkbox"/> Ripples in Bend	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Offset		
<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Drawing	<input type="checkbox"/> Out of Calibration			<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Sequence		
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio	<input type="checkbox"/> Outside Dimensions							

P.C. was missed due to employees not having the correct drawing

Work Order ID 91335

91335

Page 5

Item ID: D350-748-101

Accept

N900040100

Setup Start ***NS1***

Revision ID: U/R

Stop ***NS2***

Item Name: Crosstube Installation. High Fwd

Start Date: 04/10/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/10/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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172

0.00

172

Crosstubes

Memo

0.00

Crosstubes

LOAD TEST TO 3500LB FOR 1 MINUTE

① 130326

174

Outsource process - NDT per QSI038 4.1

0.00

174

Outsource2

Memo

0.00

Outsource process - NDT

P10:19433
Aueren

13/03/27 ①

176

Receive & Inspect for Damage & Mat'l Certs

0.00

176

Packaging

Memo

0.00

Packaging

13/3/27 ①

Pto →

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: <u>91335</u> Part No. <u>D350-748-101</u> NCR No. _____	DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>															
Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>															
Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>															
Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data <input type="checkbox"/>	13/4/1	176	x1	Found at WDT inspection that tube has a lot of imperfections on it. Future investigation found it was from Re CAD Patti. He then	GP 13/4/1	CAD Not Blotting was affect Paint Finish. Accurate per Email from C P to ED 13/4/01 (attach)	DAS 16 8-88 13/04/01	GP 13/4/1	DAS 16 8-88 13/04/01
Equip/Tooling <input type="checkbox"/>									
Operator <input type="checkbox"/>									
Material <input type="checkbox"/>									
Setup <input type="checkbox"/>									
Other <input type="checkbox"/>									
Process <input type="checkbox"/>									
Supplier <input type="checkbox"/>									
Training <input type="checkbox"/>									
Unapproved <input type="checkbox"/>									

FAULT CATEGORY

Landing Gear	General	Other
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Grain
<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Hardware
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damaged	<input type="checkbox"/> Inspection Incomplete
<input type="checkbox"/> Crushed/Crimped	<input type="checkbox"/> Burrs	<input type="checkbox"/> Instructions Incomplete/Unclear
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Maintenance
<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Countersink	<input type="checkbox"/> Misabeled
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Misread
<input type="checkbox"/> Ripples in Bend	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Offset
<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Drawing	<input type="checkbox"/> Out of Calibration
<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Sequence
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio	<input type="checkbox"/> Outside Dimensions
		<input type="checkbox"/> Ovalized
		<input type="checkbox"/> Over/Under tolerance
		<input type="checkbox"/> Part Incorrect
		<input type="checkbox"/> Part Lost/Missing
		<input type="checkbox"/> Part Moved
		<input type="checkbox"/> Positioned Wrong
		<input type="checkbox"/> Power Loss/Surge
		<input type="checkbox"/> Pressure/Forced
		<input type="checkbox"/> Temperature/Cure
		<input type="checkbox"/> Weld
		<input type="checkbox"/> Wrong Stock Pulled
		<input type="checkbox"/> Other

Work Order ID 91335

91335

Page 6

Item ID: D350-748-101

Accept

N900040100

Setup Start *NS1*

Revision ID: U/R

Stop *NS2*

Item Name: Crosstube Installation, High Fwd

Start Date: 04/10/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/10/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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178

QC5- Inspect part completeness to step on W/O

0.00

178

QC

Memo

0.00

Quality Control

1 0 0 13-04-02

180

SprayPaint

0.00

180

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside crosstube as per QSI 005 4.2 #124403/8:30-9:10
2-Prime Outside of Tube as per Dart QSI 005 4.2

Paint

124 376

1:00-1:45

1 0 0 13-04-03

190

QC14- Inspect Spray Paint

0.00

190

QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

1 0 0 13-04-04

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											

FAULT CATEGORY				
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other

Work Order ID 91335

91335

Page 7

Item ID: D350-748-101

Accept

N900040100

Setup Start *NS1*

Revision ID: U/R

Item Name: Crosstube Installation, High Fwd

Stop *NS2*

Start Date: 04/10/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/10/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	Crosstubes	0.00				1			J.P./m/13-04-08
200									
Crosstubes	Memo	0.00							
Crosstubes	1-Install Ground wire Insert, then insert screw and washer								
	2-Install Abrasion strips as per Dwg D350-748-141 & QSI 035.								
	3-Install supports Using Dt8876 as per Dwg D350-748-141, Torque to 60-80 IN-LBS								
210	QC5- Inspect part completeness to step on W/O	0.00				1			
210									
QC	Memo	0.00							
Quality Control									
220	Pick Kit	0.00							
220									
Packaging	Memo	0.00							
Packaging									

DAS
27
26
13412

13/4/12 ①

13-4-15

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION <div style="display: flex; justify-content: space-around;"> <div> <input type="checkbox"/> Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update </div> <div> <input type="checkbox"/> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab </div> <div> <input type="checkbox"/> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite </div> <div> <input type="checkbox"/> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier </div> <div> <input type="checkbox"/> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other </div> </div>							
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											

FAULT CATEGORY				
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other

Work Order ID 91335

91335

Page 8

Item ID: D350-748-101

Accept

N900040100

Setup Start ***NS1***

Revision ID: U/R

Item Name: Crosstube Installation. High Fwd

Stop ***NS2***

Start Date: 04/10/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/10/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***
Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

230 QC4- 100% Inspect kits for completeness

0.00



13-4-16

230

QC

Memo

0.00

Quality Control

240

0.00

240

Packaging

Packaging

Memo

0.00

13-4-18

8

Packaging

Identify and pack for shipping as per PPP D350-748-101

Location: 114

PPP Rev: D

250

0.00

250

QC

Memo

0.00

Quality Control

QC21- Final Inspection - Work Order Release

13/4/2018

13-04-18

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
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Training											
Unapproved											

FAULT CATEGORY			
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Picklist Print

October-05-12 9:13:16 AM

Page 1

Work Order ID: 91335

91335

Parent Item: D350-748-101

D350-748-101

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 04/10/2012

Required Date: 19/10/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 06-07-05 JLM
 IPP Rev:B Update qty of MS21042L5 06-09-12 KJ VERIFY
 BY:DD
 IPP Rev:C Rev B 07-11-15 DD
 IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD
 IPP Rev:E 08-06-24 revD as per dwg DD verified by:EC IPP Rev:F
 10.08.04 added QSI010 4.3 DD verf:EC
 IPP REV:G ADD UNDER BEND COMMENT 12-05-28 JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D350-748-141TRN

Manufactured No

110

Each

2.0000

1

1

D350-748-141TRN

Crosstube Turning Detail

**

SAO 12-12-18

Location

Loc Qty

Loc Code

LG

2

83277

1

83278

1

ALS4-1032-225

Purchased

No

200

Each

2,587.000

1

1

AI S4-1032-225

Insert

**

J.P. / 12/13/04/06

Location

Loc Qty

Loc Code

FP-B

1156

122290

1156

ST281

1408

108696

146

110768

62

118386

55

118966

68

121269

77

122827

1000

ST282

23

120410

10

120451

13

~~1224468~~
124468

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
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Unapproved											

FAULT CATEGORY				
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other	

Picklist Print

October-05-12 9:13:16 AM

Page 2

Work Order ID: 91335

Parent Item: D350-748-101

Parent Item Name: Crosstube Installation. High Fwd

91335

D350-748-101

Start Date: 04/10/2012

Required Date: 19/10/2012

Start Qty: 1.00

Required Qty: 1.00

AN960JD10 NAS1149D0363J Purchased

No

200

Each

0.0000

1

1

AN960.ID10

Washer

B# 122378

**

J.P./M/13.04.06

D2856-400

Manufactured

No

200

f

488.9839

1.181

1.243158

D2856-400

Abrasion Strip

**

J.P./M/13.04.06

Location

Loc Qty

Loc Code

B# 95159

ST403

168.7825

81875

6.398

89352

162.3845

ST408

216

90764

216

ST409

104.2014

63735

0.6696

68076

0.3149

71164

8.46

86905

94.7569

D3502-1

Manufactured

No

200

Each

103.0000

2

2

D3502-1

Support

**

J.P./M/13.04.06

Location

Loc Qty

Loc Code

LG050

25

77041

25

ST051

10

73419

9

74873

1

ST053

68

86876

44

88465

24

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY				
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other

Picklist Print

October-05-12 9:13:16 AM

Work Order ID: 91335

Parent Item: D350-748-101

Parent Item Name: Crosstube Installation, High Fwd

91335

D350-748-101

Start Date: 04/10/2012

Required Date: 19/10/2012

Start Qty: 1.00

Required Qty: 1.00

MS21920-20

Purchased

No

200

Each

159.0000

2

2

MS21920-20

Clamp (per MIL-DTL-8783C)

**

J.P. / m / 13.04.08

Location

Loc Qty

Loc Code

FG

4

122254

4

LG050

155

116799

8

120676

8

121067

2

121274

2

122254

35

122518

50

122838

50

B* 124695

MS27039-1-10

Purchased

No

200

Each

417.0000

1

1

MS27039-1-10

Screw

**

J.P. / m / 13.04.08

Location

Loc Qty

Loc Code

308

9

122441

9

GA

100

120449

100

ST291

5

120120

5

ST305

300

122815

300

ST308

3

122027

3

124326

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY				
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other	

Picklist Print

October-05-12 9:13:16 AM

Page 4

Work Order ID: 91335

Parent Item: D350-748-101

Parent Item Name: Crosstube Installation, High Fwd

91335

D350-748-101

Start Date: 04/10/2012

Required Date: 19/10/2012

Start Qty: 1.00

Required Qty: 1.00

AN4-41A

Purchased

No

220

Each

363.0000

AN4-41A

Bolt

**

M120423

Location

Loc Qty

Loc Code

360

181

121185

181

ST360

182

115108

3

119328

29

120423

150

AN4-6A

Purchased

No

220

Each

1,207.000

AN4-6A

Bolt

**

M123358

Location

Loc Qty

Loc Code

ST355

707

122808

557

123248

150

ST356

500

121243

500

AN5-32A

Purchased

No

220

Each

295.0000

AN5-32A

Bolt

**

M124936

Location

Loc Qty

Loc Code

ST337

100

122416

50

122800

50

ST338

50

122993

50

ST339

93

122151

93

ST340

52

121541

52

October-05-12 9:13:16 AM

Shop Packet Print

Page 4

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY									
Landing Gear			General						
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Grain	<input type="checkbox"/> Ovalized	<input type="checkbox"/> Pressure/Forced					
<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Hardware	<input type="checkbox"/> Over/Under tolerance	<input type="checkbox"/> Temperature/Cure					
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damaged	<input type="checkbox"/> Inspection Incomplete	<input type="checkbox"/> Part Incorrect	<input type="checkbox"/> Weld					
<input type="checkbox"/> Crushed/Crimped	<input type="checkbox"/> Burrs	<input type="checkbox"/> Instructions Incomplete/Unclear	<input type="checkbox"/> Part Lost/Missing	<input type="checkbox"/> Wrong Stock/Pulled					
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Part Moved						
<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Countersink	<input type="checkbox"/> Mislabeled	<input type="checkbox"/> Positioned Wrong						
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Misread	<input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Other					
<input type="checkbox"/> Ripples in Bend	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Offset							
<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Drawing	<input type="checkbox"/> Out of Calibration							
<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Sequence							
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio	<input type="checkbox"/> Outside Dimensions							

Picklist Print

October-05-12 9:13:16 AM

Page 5

Work Order ID: 91335

Parent Item: D350-748-101

Parent Item Name: Crosstube Installation, High Fwd

91335

D350-748-101

Start Date: 04/10/2012

Required Date: 19/10/2012

Start Qty: 1.00

Required Qty: 1.00

AN960JD416 NAS1149D0463J Purchased No

220 Each

29.0000

AN960JD416

Washer

Location

Loc Qty

Loc Code

ST351

29

116289

8

119097

21

AN960JD516 NAS1149D0563J Purchased No

220 Each

2.0000

AN960JD516

Washer

Location

Loc Qty

Loc Code

ST338

2

1069059

2

D3500-1 Manufactured No

220 Each

115.0000

D3500-1

Saddle

Location

Loc Qty

Loc Code

ST423

27

85421

27

ST428A

88

86763

40

88346

24

89220

12

90055

12

**

32
M124 778

**

8
M122462

**

4
13/4/02

86 763

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											

FAULT CATEGORY				
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other	

Picklist Print

October-05-12 9:13:16 AM

Work Order ID: 91335

91335

Parent Item: D350-748-101

D350-748-101

Parent Item Name: Cresstube Installation, High Fwd

Start Date: 04/10/2012

Required Date: 19/10/2012

Start Qty: 1.00

Required Qty: 1.00

D3501-1

Manufactured No

220

Each

295.0000

D3501-1
Bushing

**

9094765

7088532

Location

Loc Qty

Loc Code

ST043

160

86913

160

ST051

135

67757

4

73391

6

74866

125

MS21042L4

Purchased

No

220

Each

6,051.0000

MS21042L4
Nut

**

M124231

Location

Loc Qty

Loc Code

314

2124

122452

2124

ST300

27

119017

20

121444

7

ST314

3900

123021

3000

123248

900

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION <div style="display: flex; justify-content: space-around;"> <div>Rework <input type="checkbox"/></div> <div>Skid-tube <input type="checkbox"/></div> <div>Crosstube <input type="checkbox"/></div> <div>Water Jet <input type="checkbox"/></div> <div>Engineering <input type="checkbox"/></div> </div> <div style="display: flex; justify-content: space-around;"> <div>Scrap <input type="checkbox"/></div> <div>Machining <input type="checkbox"/></div> <div>Small Fab <input type="checkbox"/></div> <div>Prod. Eng. Coord. <input type="checkbox"/></div> <div>Quality <input type="checkbox"/></div> </div> <div style="display: flex; justify-content: space-around;"> <div>Use-as-is <input type="checkbox"/></div> <div>Thermoforming <input type="checkbox"/></div> <div>Finishing <input type="checkbox"/></div> <div>Rec/Store/Packaging <input type="checkbox"/></div> <div>Other <input type="checkbox"/></div> </div> <div style="display: flex; justify-content: space-around;"> <div>Work Order Update <input type="checkbox"/></div> <div>Large Fab <input type="checkbox"/></div> <div>Composite <input type="checkbox"/></div> <div>Supplier <input type="checkbox"/></div> </div>	
--	---	--

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator									
Material									
Setup									
Other									
Process									
Supplier									
Training									
Unapproved									

FAULT CATEGORY

Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other
---	---	---	--	---

Picklist Print

October-05-12 9:13:16 AM

Page 7

Work Order ID: 91335

Parent Item: D350-748-101

Parent Item Name: Crosstube Installation, High Fwd

91335

D350-748-101

Start Date: 04/10/2012

Required Date: 19/10/2012

Start Qty: 1.00

Required Qty: 1.00

MS2104215

Purchased

No

220

Each

1,343.000

MS2104215

Nut

**

4
m12 3 Su L

Location

Loc Qty

Loc Code

300

263

121652

263

314

1000

122452

1000

ST300

80

108827

4

116105

1

116548

43

119109

20

2937

12

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

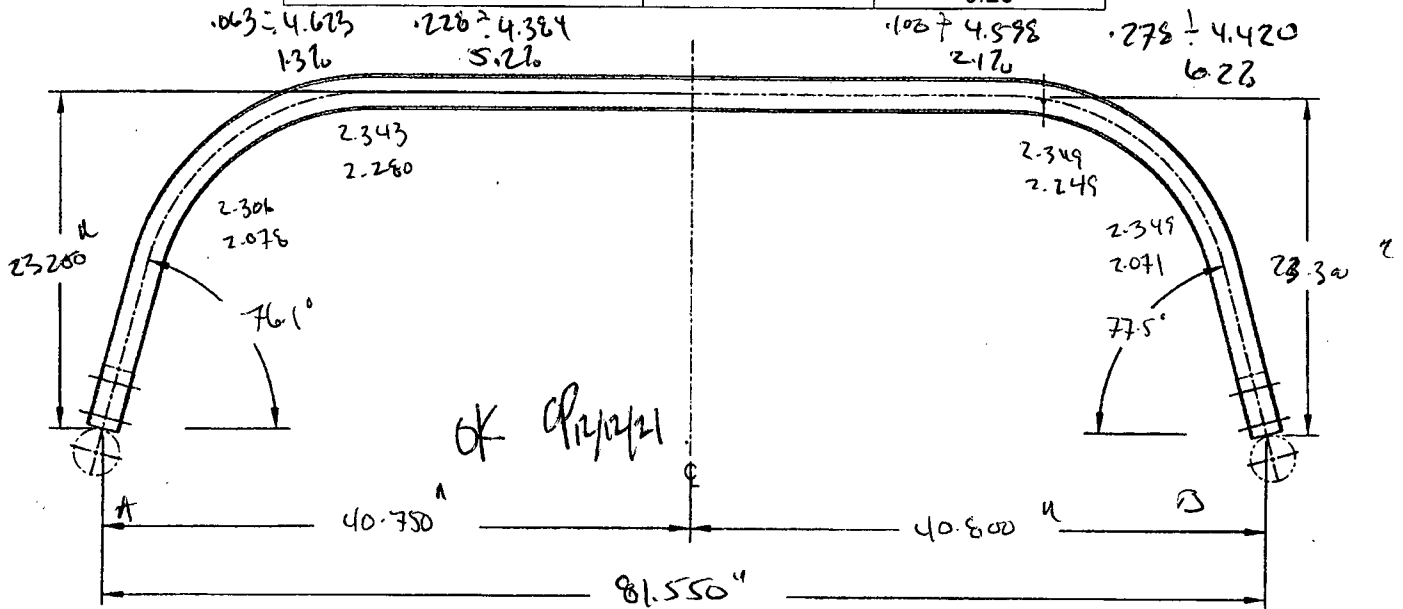
QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
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Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY			
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other

DART AEROSPACE LTD		Work Order:	
Description: Crosstube High Fwd (AS350/355)		Part Number:	D350-748-101
Inspection Dwg: D350-748-141	Rev: F	Page 1 of 1	

Required Dimension	Min	Max
Height	23.12	23.38
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.55	82.05
Bending Passes	7	--
Crushing	--	6%
Twist	--	0.25



	Side A	Side B
Bending Passes		
Crushing		
Comments		
twist = 0.012"		
Side A crushing =	1.376 @ top	5.276 @ Bottom
Side B crushing =	2.176 @ top	6.226 @ Bottom

QC15 Inspection	12/12/21
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	10.08.23	Dwg Rev updated	KJ	
C	11.11.07	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing & twist dimensions	KJ	

Item	Qty -141	Part Number	Description
1	X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
2	1	D6015-125	CROSSTUBE (OR D6017-115)
3	2	D3502-1	SUPPORT
4	2	D2856-400-710	ABRASION STRIP
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
8	1	MS27039-1-10	SCREW

GENERAL NOTES:

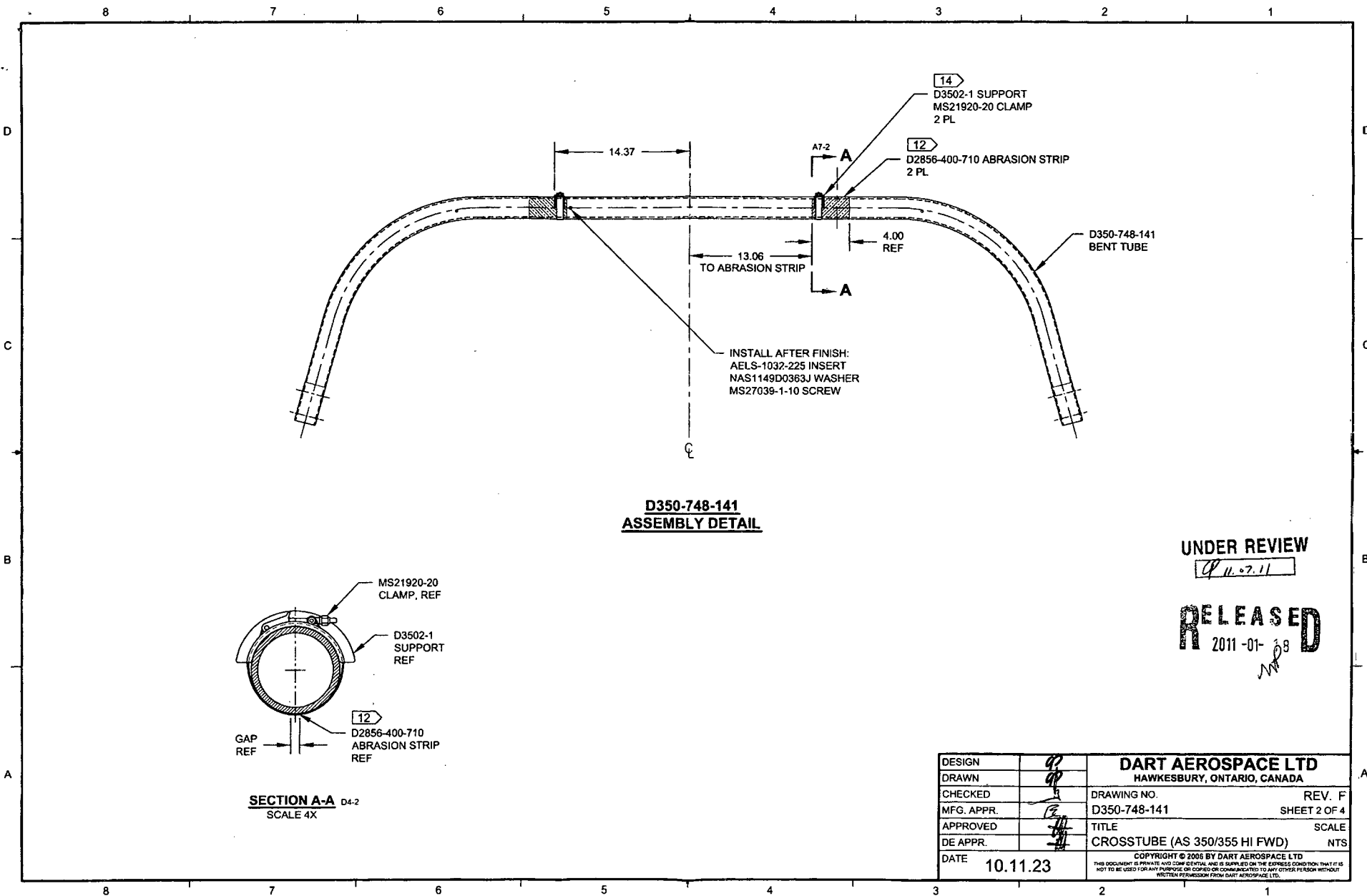
- 1) MATERIAL: MANUFACTURED FROM D6015-125 OR D6017-115
FINISHED LENGTH = 110.270±0.06
- 2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-141" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 30.45 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
- 9) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING. ACCEPTABLE TO VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.
- 12) INSTALL D2856-400-710 ABRASION STRIPS WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 13) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 14) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 15) MAX TWIST AFTER BENDING: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.25 (ZN C1-3).

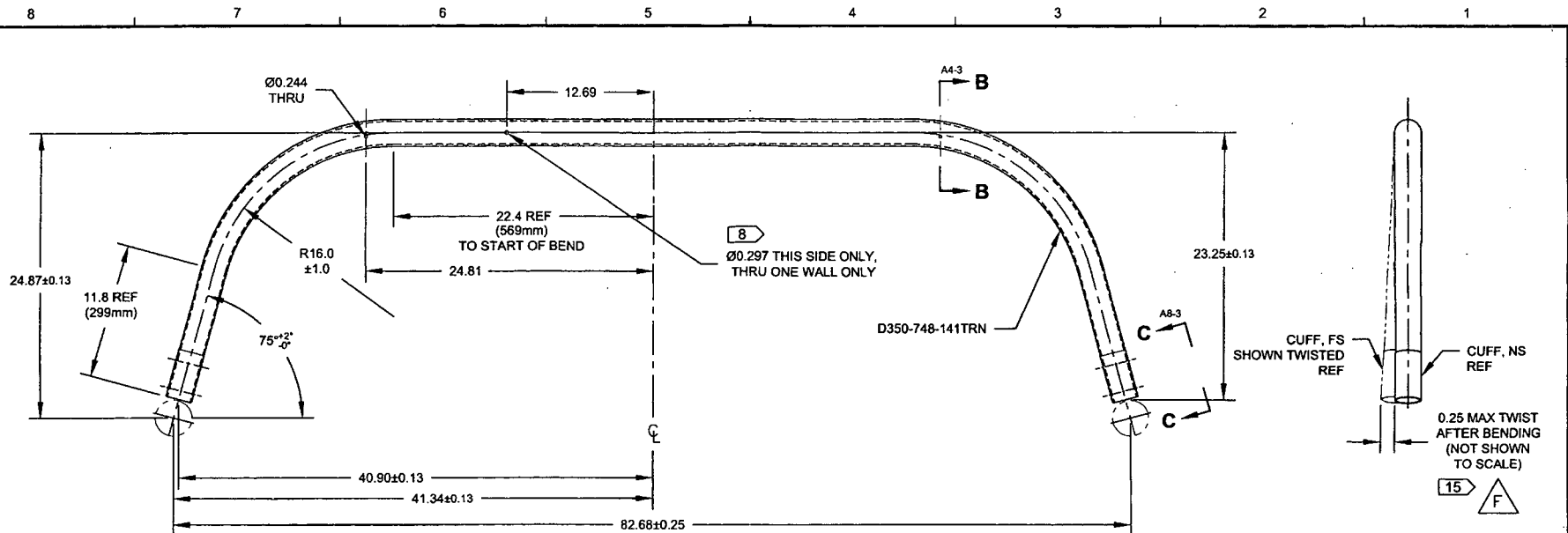
UNDER REVIEW

11.07.12

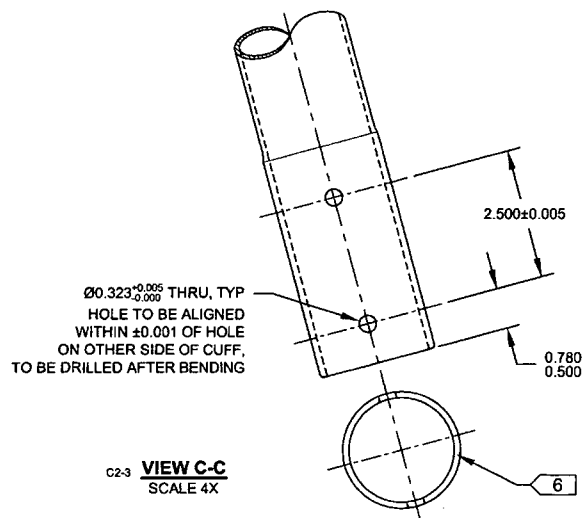
RELEASED
2011-01-18

F	ADD HRC TEST OPTION (B8-1) PER PAR 09-040, ADD TWIST LIMIT (A8-1, C1-3), ADD D8015-125 OPTION (C8-1), STOCK DIM NOW MACHINED (D1-4)	CP	10.11.23
E	REVISE GENERAL NOTES; UPDATE TO CURRENT ADD STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); TOLERANCES (ZN C6-3, D1-3)	RF	09.09.30
D	MAG. PARTICLE AND CAD PLATE AS MFD.	CP	06.10.31
C	ADD CAD PLATING	CP	06.08.14
B	ADD D6017-115 & PRIME AND PAINT	CP	06.06.30
A	NEW ISSUE	CP	06.03.31
REV.	DESCRIPTION	BY	DATE
DESIGN	99	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	99	DRAWING NO. REV. F	
CHECKED	99	D350-748-141 SHEET 1 OF 4	
MFG. APPR.	99	TITLE SCALE	
APPROVED	99	CROSSTUBE (AS 350/355 HI FWD) NTS	
DE APPR.	99	COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	10.11.23		

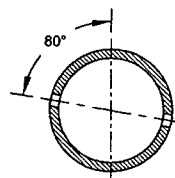




D350-748-141
BENDING AND DRILLING DETAIL 10



VIEW C-C
SCALE 4X



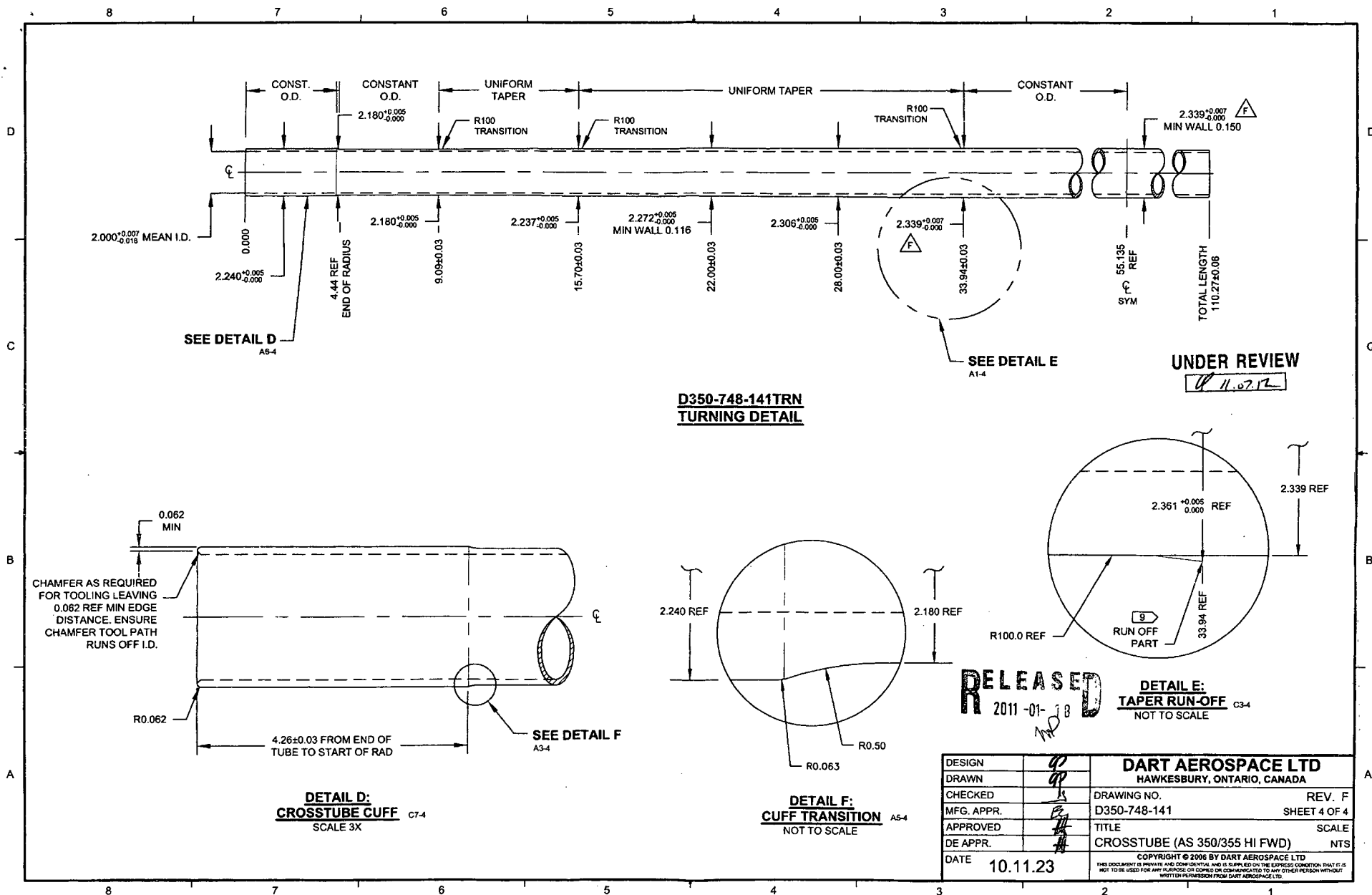
SECTION B-B D3-3
SCALE 4X

UNDER REVIEW

11.02.12

RELEASED
2011-01-18

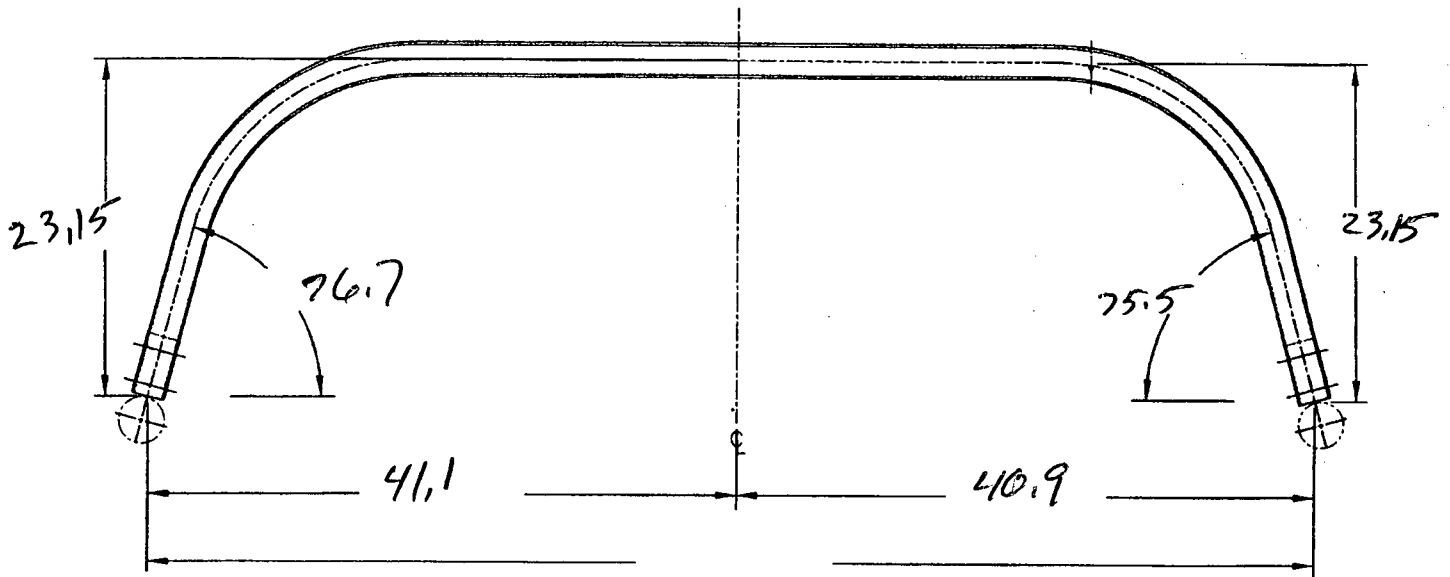
DESIGN	90	DART AEROSPACE LTD	
DRAWN	90	HAWKESBURY, ONTARIO, CANADA	
CHECKED	90	DRAWING NO.	REV. F
MFG. APPR.	90	D350-748-141	SHEET 3 OF 4
APPROVED	90	TITLE	SCALE
DE APPR.	90	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	10.11.23	COPYRIGHT © 2006 BY DART AEROSPACE LTD	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			



Measured Before De-Steer

DART AEROSPACE LTD		Work Order:	91335
Description: Crosstube High Fwd (AS350/355)		Part Number:	D350-748-101
Inspection Dwg: D350-748-141	Rev: F	Page 1 of 1	

Required Dimension	Min	Max
Height	23.12	23.38
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.55	82.05
Bending Passes	7	--
Crushing	--	6%
Twist	--	0.25



	Side A	Side B
Bending Passes	39 passes	37 passes
Crushing		
Comments		
TWIST 0.024'		

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	10.08.23	Dwg Rev updated	KJ	
C	11.11.07	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing & twist dimensions	KJ	<i>[Signature]</i>

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Recu de Livraison

Order	Shipper	Shipping Seq.
182269	1	67436

Shipped Complete

Customer **215**

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

Shipped To:

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

Purchase Order Number	Customer Shipper No.	Material Type	Order Date	Carrier
PO18651		STEEL	2012/12/19	client

Container Type	# Of Containers	Container Comments
NIL	1	

CERTIFICAT

PACKING	
----------------	--

Quantity Shipped: 5

Pounds Shipped: 155,00

Quantity Remaining: 0

Pounds Remaining: 0,00

CERTIFICAT

Quantity Shipped: 5

Pounds Shipped: 155,00

Signature:

Date:

Shipped ON: 2012/12/20

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Recu de Livraison

Order	Shipper	Shipping Seq.
182269	1	67436

Shipped Complete

Customer **215**

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

Shipped To:

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

Purchase Order Number	Customer Shipper No.	Material Type	Order Date	Carrier
PO 18651		STEEL	2012/12/19	client

Quantity	Part No. / Part Name / Part Description	Pounds
----------	---	--------

5 D350-748-101 155,

CROSSTUBE

(1) CROSSTUBE

REFERENCE 90046

(1) D350-748-101

CROSSTUBE

REFERENCE: 85566

(1) D350-748-101

CROSSTUBE

REFERENCE 87340

(1) D350-748-101

CROSSTUBE

REFERENCE 91335

(1) D350-748-101

CROSSTUBE

REFERENCE 85567

CONTENANT: 1 NIL

CERTIFICAT

Quantity Shipped: 5

Pounds Shipped: 155,00

Signature:

Date:

Shipped ON: 2012/12/20

Certificat de Conformité Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
182269	1

CLIENT / customer 215
DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K8A 1K7

LIVRÉ À / shipped to:
DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K8A 1K7

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT mat'l heat code	NUMÉRO DE LOT lot number
PO18651				
<u>SPÉCIFICATIONS DU PROCÉDÉ</u> processing specifications STRESS REL SAE AMS 2759/1 REV.E				

EXIGENCE / requirement SPÉCIFICATIONS / specified TESTS EXÉCUTÉS / performed RÉSULTATS DE TESTS / results
Visual

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
5	155	D350-748-101 CROSSTUBE (1) CROSSTUBE REFERENCE 90046 (1) D350-748-101 CROSSTUBE REFERENCE: 85566 (1) D350-748-101 CROSSTUBE REFERENCE 87340 (1) D350-748-101 CROSSTUBE REFERENCE 91335 (1) D350-748-101 CROSSTUBE REFERENCE 85567 CONTENANT: 1 NIL



Metcor Inc.

Page 1 / 2

560, boul. Arthur-Sauvé, St-Eustache (Québec) J7R 5A8
Tél. 450 473-1884
Télécopieur/Fax administration 450 491-5498
Télécopieur/Fax production 450 491-6454

Certificat de Conformité
Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
182269	1

CLIENT / customer 215
DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K8A 1K7

LIVRÉ À / shipped to:
DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K8A 1K7

COMMENTAIRES / comments

CERTIFIÉ par / Certified by:



DATE: 2012-12-20

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
182269	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

Operation	Temp. spécifiée Specified Temp	Temps de trempe Spécifié Specified Soak Temp	Atmosphere	Carbone Carbon Potential	Q-Media Q-Temp	Four # Furnace #	Date Départ Start Date	Heure d'entrée Time In	Heure de sortie Time Out	Date Complétée Date complete
2.00 PREPARING	COMPTAGE									
3.00 STRESS RE	343°C +/- 6°C	2:00	air			701				
4.00 FINAL INSP							12-20-2012			12-20-2012

COMMENTAIRES / comments

LES TRAITEMENTS THERMIQUES SUR CETTE COMMANDE A ÉTÉ FAIT EN UTILISANT DES ÉQUIPEMENTS EN CONFORMITÉ AVEC LES REQUIS DE LA SPÉCIFICATION AMS2759.

TOUTES LES OPÉRATIONS DE TRAITEMENT THERMIQUE ONT ÉTÉ FAITES EN CONFORMITÉ AVEC LES REQUIS DE LA SPÉCIFICATION DEMANDÉE ET TOUTES LES VÉRIFICATIONS ET LES TESTS DEMANDÉES ONT ÉTÉ FAITES ET DOCUMENTÉS.

AUCUN CHANGEMENT OU DÉROGATION N'A ÉTÉ FAITE PAR RAPPORT AU TRAITEMENT THERMIQUE DEMANDÉ. ON CERTIFIE QUE LE MATÉRIEL A ÉTÉ FABRIQUÉ, ÉCHANTILLONNÉ, TESTÉ ET INSPECTÉ EN ACCORD AVEC LES SPÉCIFICATIONS DU MATÉRIEL ET LE BON DE COMMANDE ET LE MATÉRIEL RENCONTRE LES EXIGENCES SPÉCIFIÉS.

ACCOMPLISHED USING HEAT TREATMENT EQUIPMENT THAT MEETS THE REQUIREMENTS OF AMS 2759. ALL THE HEAT TREATMENT OPERATIONS WERE ACCOMPLISHED IN ACCORDANCE WITH THE REQUESTED/REQUIRED HEAT TREATMENT SPECIFICATION AND ALL REQUIRED VERIFICATIONS TEST HAVE BEEN PERFORMED AND DOCUMENTED. NO UNAUTHORIZED CHANGES OR ALL THE HEAT TREATMENT PROCESSING PERFORMED ON THIS ORDER WAS DEVIATIONS TO REQUIRED HEAT TREATMENT SPECIFICATIONS OR PROCEDURES HAVE BEEN PERFORMED.

WE CERTIFY THAT THE MATERIAL WAS MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE MATERIAL SPECIFICATION AND THE PURCHASE ORDER AND WAS FOUND TO MEET THE REQUIREMENTS.

APPROUVÉ par / Approved by:

John Ober



DATE: 2012-12-20

/ Nous certifions que toute l'information comprise sur ce rapport est exacte et conforme aux requis du client. / We certify that all the information on this report is exact and in accordance with the order requirements.



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO18743

Purchase Order Date 1/07/13

PO Print Date 1/21/13

Page Number 1 of 3

Order From :

VC-CAD002

CADORATH COATING
2150 LOGAN AVE.
WINNIPEG, MB R2R 0J2
CA

Contact Name

Vendor Phone

Vendor Fax

Vendor Account Nbr

204 633 9420

204 633 8033

Buyer

Requisition Nbr

Tax Resale Nbr

Terms

Currency

FOB

Chantal Lavoie

10127-2607

Net 30

CAD

Destination-Collect

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

REVISED

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	85566 ✓	D350-748-101 CROSSTUBE	1/18/13 Yes	1.00 ✓	Day & Ross coll	\$776.2500	\$776.25
Special Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375 defree for 8 hrs, Chromate Treat C of C req'd							
2	85567 ✓	D350-748-101 CROSSTUBE	1/18/13 Yes	1.00 ✓	Day & Ross coll	\$776.2500	\$776.25
Speci Stress relief at 375degree for 5hrs Magnetic Particle Inspect per ASTM E1444 Cad Plate per AMS-QQ-P-416B, Class 1, Type 2 Embrittle relief at 375 defree for 8 hrs, Chromate Treat C of C req'd							

SP13-01-28

No substitution or deviation without
consent.

Certificate of Conformity or Material
Certification required: YES NO

Change Nbr:

3

Change Date: 1/21/13



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO18743

Purchase Order Date 1/07/13

PO Print Date 1/21/13

Page Number 2 of 3

Order From :

VC-CAD002

CADORATH COATING
2150 LOGAN AVE.
WINNIPEG, MB R2R 0J2
CA

Contact Name

Vendor Phone

204 633 9420

Vendor Fax

204 633 8033

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr

10127-2607

Terms

Net 30

Currency

CAD

FOB

Destination-Collect

3	87340	D350-748-101 CROSSTUBE	1/18/13	1.00	Day & Ross coll	\$776.2500	\$776.25
---	-------	---------------------------	---------	------	-----------------	------------	----------

Yes

Special Instr:

Stress relief at 375degree for 5hrs
Magnetic Particle Inspect per ASTM E1444
Cad Plate per AMS-QQ-P-416B, Class 1,
Type 2
Embrittle relief at 375 deegree for 8 hrs,
Chromate Treat
C of C req'd

4	90046	D350-748-101 CROSSTUBE	1/18/13	1.00	Day & Ross coll	\$1,151.2500	\$1,151.25
---	-------	---------------------------	---------	------	-----------------	--------------	------------

Yes

Special Instr:

Stress relief at 375degree for 5hrs
Magnetic Particle Inspect per ASTM E1444
Cad Plate per AMS-QQ-P-416B, Class 1,
Type 2
Embrittle relief at 375 deegree for 8 hrs,
Chromate Treat
C of C req'd
EXTRA CARGE: MPI INSPECTION

5	91335	D350-748-101 CROSSTUBE	1/18/13	1.00	Day & Ross coll	\$776.2500	\$776.25
---	-------	---------------------------	---------	------	-----------------	------------	----------

Yes

No substitution or deviation without
consent.

Certificate of Conformity or Material

Certification required - YES NO

Change Nbr: 3

Change Date: 1/21/13

2013-01-28



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO18743

Purchase Order Date 1/07/13

PO Print Date 1/21/13

Page Number 3 of 3

Order From :

VC-CAD002

CADORATH COATING
2150 LOGAN AVE.
WINNIPEG, MB R2R 0J2
CA

Contact Name

Buyer

Chantal Lavoie

Vendor Phone

204 633 9420

Requisition Nbr

Vendor Fax

204 633 8033

Tax Resale Nbr

10127-2607

Vendor Account Nbr

Terms

Net 30

Currency

CAD

FOB

Destination-Collect

Special Inst: Stress relief at 375degree for 5hrs
Magnetic Particle Inspect per ASTM E1444
Cad Plate per AMS-QQ-P-416B, Class 1,
Type 2
Embrittle relief at 375 defree for 8 hrs,
Chromate Treat
C of C req'd

PO Total:

\$4,256.25

SP 13-01-28

WGL

Change Nbr:

3

Change Date:

1/21/13

No substitution or deviation without
consent.

Certificate of Conformity or Material
Certification required ☒ YES ☐ NO

Chantal Lavoie

From: Linda Lacelle <llacelle@dartaero.com>
Sent: January 21, 2013 11:47 AM
To: Chantal
Subject: FW: CrossTube P/O 18743 S/N 90046

Could you pls revise PO

From: Patrick Smith [mailto:psmith@dartaero.com]
Sent: January-21-13 11:46 AM
To: llacelle@dartaero.com
Subject: FW: CrossTube P/O 18743 S/N 90046

FYI

From: chris jones [mailto:chris.jones@cadorath.com]
Sent: January-21-13 11:26 AM
To: 'Patrick Smith'
Cc: 'Cisco Lindo'
Subject: RE: CrossTube P/O 18743 S/N 90046

Hi Pat

Sorry I forgot to include in the last email that there will be a charge of \$375 for the work performed so far. We have MPI inspected the part twice and it was run through the plating process. If you have any questions please let Cisco or I know.

Sincerely



**Chris
Jones**

Quality Assurance
Cadorath

Director of

Strength through Diversity
Serving industries that better the world

2070 Logan Avenue
Winnipeg, Manitoba, Canada R2R 0H9

Phone 204.633.2707 **Toll Free** 800-467-7069 **Fax**
204.632.7663 **Cell** 204.800-1190
chris.jones@cadorath.com www.cadorath.com

Cadorath News

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From: Patrick Smith [mailto:psmith@dartaero.com]
Sent: January-21-13 8:34 AM
To: chris jones; cisco@cadorath.com
Cc: cprovencal@dartaero.com; Eric Downing; llacelle@dartaero.com; dshepherd@dartaero.com; Mike Petsche
Subject: FW: CrossTube P/O 18743 S/N 90046

Hi Chris,

Our engineering staff has requested the tube returned as is, we will carry out the grinding, inspection and return for Cadmium plating with our next shipment.

Thanks,

Pat

From: Chris Provencal [<mailto:cprovencal@dartaero.com>]

Sent: January-21-13 9:16 AM

To: 'Patrick Smith'; David Shepherd

Cc: 'Eric Downing'; llacelle@dartaero.com; Mike Petsche

Subject: RE: CrossTube P/O 18743 S/N 90046

Pat,

My preference in this case would be to have the tube returned, we grind the tube, then return it to Cadorath in the next shipment. The grinding needs to be done longitudinally, and we won't be able to inspect the surface after CAD plate.

-Chris

From: Patrick Smith [<mailto:psmith@dartaero.com>]

Sent: Monday, January 21, 2013 7:26 AM

To: 'chris jones'

Cc: 'Cisco Lindo'; cprovencal@dartaero.com; Eric Downing; llacelle@dartaero.com

Subject: RE: CrossTube P/O 18743 S/N 90046

Hi Chris,

Go ahead and blend the mark and cadmium plate the tube, please mark the area on the tube once it is ready to ship and we will carry out a wall thickness check upon its arrival.

Thanks for the heads ups.

Regards,

Pat

From: chris jones [<mailto:chris.jones@cadorath.com>]

Sent: January-18-13 4:33 PM

To: 'Patrick Smith'

Cc: 'Cisco Lindo'

Subject: CrossTube P/O 18743 S/N 90046

Good afternoon Pat

We have processed a crosstube on P/O 18743 and after plating we have found what appears to be a crack in the tube at MPI. Our Ndt technician has called out a "axial crack 2" long into parent material on outside of crosstube" Now the concern we have is that under white light inspection it appears to be more of a gauge then a crack but we do not want to attempt to blend it out without your okay. Could you please let us know if there are acceptable blend limits or is there another course of action you would like us to take.

Sincerely



**Chris
Jones**

Quality Assurance
Cadorath

Director of

Strength through Diversity
Serving industries that better the world

2070 Logan Avenue
Winnipeg, Manitoba, Canada R2R 0H9

Phone 204.633.2707

Toll Free 800.470.7069

Fax

204.632.7663

Cell 204.801.4190

chris.jones@cadorath.com **www.cadorath.com**

Cadorath News

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CADORATH GROUP
NON CONFORMANCE REPORT

CADORATH AEROSPACE ☐

CADORATH DISTRIBUTION ☐

CADORATH COATING ☒

UNIFLYTE ☐

NOTE: THIS FORM MUST BE COMPLETED BY: CUSTOMER ☒ VENDOR ☐ BEFORE PROCESSING OF PART(S)

NCR#: **C1125**

CUSTOMER: ☒ **Dart Aerospace**

DATE: **01/22/13**

VENDOR: ☐ **N/A**

PART DESCRIPTION: **Crosstube**

CUSTOMER P/O #: **18743**

PART #: **D350-748-101**

SERIAL #: **90046** QUANTITY: **one (1)**

PURCHASE ORDER INSTRUCTIONS: **CADMIUM PLATE IAW AMS-QQ-P-416C TYPE 2 YELLOW CLASS 2**

DISCREPANCY: **ONE CRACK 2 INCHES IN LENGTH WAS FOUND DURING MPI.**

TRAVIS SZABO

CADORATH/UNIFLYTE INSPECTION DEPARTMENT

CI
22

CUSTOMER: ☒

PLEASE COMPLETE THIS PORTION, SIGN AND RETURN TOP COPY OF THIS FORM TO CADORATH/UNIFLYTE

VENDOR: ☐

DATE: **01/22/13** P/O: **18743**

CUSTOMER INSTRUCTIONS: ☐

ATTENTION: QA-Inspection

VENDOR CORRECTIVE ACTION: ☐

AUTHORIZED SIGNATURE

NAME AND TITLE

DATE: 10/13/10

FORM: OPS 097
REVISION: 3

Packing Slip



Cadorath Coating

2150 Logan Avenue, Winnipeg, Manitoba R2R-0J2

Phone: (204) 633-9420 Fax: (204) 633-8033

INVOICE NUMBER:

S 64236

Sold To:

Dart Aerospace Ltd.
1270 Aberdeen St.

Hawksbury, ON K6A 1K7

ShipTo:

Net 2% Interest Per Month charged on Overdue Accounts.

Any claims for shortages, overcharges, or damaged goods must be made within seven (7) days from receipt of goods.

Customer Order #:	Date Received:	Terms:	G.S.T. #:	Ship Via:	Ship Date:
PO18743	Jan-09-2013	NET 30 DAYS	10071 6547 RT0001		Jan-22-2013

Item #	Qty	P/N & Description
--------	-----	-------------------

1	1 EA	CROSSTUBE P/N d350-748-101	S/N 85566 W/O 120849
2	1 EA	CROSSTUBE P/N d350-748-101	S/N 85567 W/O 120850
3	1 EA	CROSSTUBE P/N d350-748-101	S/N 87340 W/O 120851
4	1 EA	CROSSTUBE P/N d350-748-101	S/N 91335 W/O 120853
5	1 EA	CROSSTUBE P/N d350-748-101	S/N 90046 W/O 120852

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Jan-22-2013

CONIGNED TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 120853

INVOICE #: 64236

**CONTRACT OR
PURCHASE ORDER # PO18743**

DESCRIPTION: CROSSTUBE

P/N # d350-748-101

S/N # 91335

QTY

1

STRIP AND CADMIUM PLATING IAW AMS-QQ-P-416C TYPE 2
YELLOW CLASS 2. MPI IAW ASTM-E-1444. BAKE HEAT CHART # 13-
30, 13-53.

CERTIFICATE: I certify that the items indicated here on have
been inspected and tested and conform to all specifications
and requirements detailed on the contract or purchase order.

CI
22

Approved Inspector:

Packing Slip



Cadorath Coating

2150 Logan Avenue, Winnipeg, Manitoba R2R-0J2

Phone: (204) 633-9420 Fax: (204) 633-8033

INVOICE NUMBER:

S 64692

Net 2% Interest Per Month charged on Overdue Accounts.

Any claims for shortages, overcharges, or damaged goods must be made within seven (7) days from receipt of goods.

Sold To: Dart Aerospace Ltd. 1270 Aberdeen St. Hawksbury, ON K6A 1K7
ShipTo:

Customer Order #:	Date Received:	Terms:	G.S.T. #:	Ship Via:	Ship Date:
PO19086	Feb-15-2013	NET 30 DAYS	10071 6547 RT0001		Feb-22-2013

Item #	Qty	P/N & Description	
1	1 EA	CROSSTUBE	S/N 85566
		P/N D350-748-101	W/O 121918
2	1 EA	CROSSTUBE	S/N 91335
		P/N D350-748-101	W/O 121922
3	1 EA	CROSSTUBE	S/N 87340
		P/N D350-748-101	W/O 121920
4	1 EA	CROSSTUBE	S/N 85567
		P/N D350-748-101	W/O 121919

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Feb-22-2013

CONSIGNEE TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 121919

INVOICE #: 64692

**CONTRACT OR
PURCHASE ORDER #** PO19086

DESCRIPTION: CROSSTUBE

QTY 1

P/N # D350-748-101

S/N # 85567

STRIP CADMIUM PLATING IAW MIL-STD-871.

CERTIFICATE: I certify that the items indicated here on have
been inspected and tested and conform to all specifications
and requirements detailed on the contract or purchase order.



Approved Inspector:

A handwritten signature in dark ink, consisting of a series of loops and strokes, positioned above a horizontal line.

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Feb-22-2013

CONSIGNEE TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 121920

INVOICE #: 64692

**CONTRACT OR
PURCHASE ORDER #** PO19086

DESCRIPTION: CROSSTUBE

QTY 1

P/N # D350-748-101

S/N # 87340

STRIP CADMIUM PLATING IAW MIL-STD-871.

CERTIFICATE: I certify that the items indicated here on have been inspected and tested and conform to all specifications and requirements detailed on the contract or purchase order.



Approved Inspector: _____

A handwritten signature in black ink, appearing to be 'R. [unclear]', written over a horizontal line.

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Feb-22-2013

CONSIGNEE TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 121922

INVOICE #: 64692

**CONTRACT OR
PURCHASE ORDER #** PO19086

DESCRIPTION: CROSSTUBE

QTY 1

P/N # D350-748-101

S/N # 91335

STRIP CADMIUM PLATING IAW MIL-STD-871.

CERTIFICATE: I certify that the items indicated here on have been inspected and tested and conform to all specifications and requirements detailed on the contract or purchase order.



Approved Inspector:

A handwritten signature in black ink, appearing to be 'E. J. ...', written over a horizontal line.

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Feb-22-2013

CONIGNED TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 121918

INVOICE #: 64692

**CONTRACT OR
PURCHASE ORDER #** PO19086

DESCRIPTION: CROSSTUBE

QTY 1

P/N # D350-748-101

S/N # 85566

STRIP CADMIUM PLATING IAW MIL-STD-871.

**CERTIFICATE: I certify that the items indicated here on have
been inspected and tested and conform to all specifications
and requirements detailed on the contract or purchase order.**



Approved Inspector: _____

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Mar-22-2013

CONSIGNED TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 122651

INVOICE #: 65198

**CONTRACT OR
PURCHASE ORDER #** PO19238

DESCRIPTION: CROSSTUBE

QTY 1

P/N # d350-748-101

S/N # 91335

STRIP IAW MIL-STD-871. MPI IAW ASTM-E-1444. CADMIUM PLATING
IAW AMS-QQ-P-416C TYPE 2 YELLOW CLASS 1. FINAL MPI IAW
ASTM-E-1444. BAKE HEAT CHART # 13-231 AND # 13-259.

CERTIFICATE: I certify that the items indicated here on have
been inspected and tested and conform to all specifications
and requirements detailed on the contract or purchase order.



Approved Inspector: _____

A handwritten signature in black ink, consisting of several sweeping strokes, positioned above a horizontal line.



LIQUID PENETRANT TEST REPORT

P. 12155

CLIENT Dart Aerospace DATE March 26 2013 PAGE 1 OF 1
ATTENTION Chantelle, Linda, Andy ACUREN JOB NO. 128-B-C0231 TIME AM ☐ PM ☒
ADDRESS 1270 Aberdeen St, PO/WO No. 19433
Hawkesbury, on WORK LOCATION As Address
PROJECT Pt - Wet Fluorescent Liquid penetrant Inspection ACCEPTANCE STD. ASTM 1417/AS 1000 REV./DATE 2005
ITEM(S) EXAMINED See Below

JOB DESCRIPTION PROCEDURE NO. LT-002 REV./DATE 2009 TECHNIQUE NO. LT-002 REV./DATE 2009
PART NO. PERFORMED A WET FLUO L.P.I. ON 100% OF THE EXTERNAL SURFACE ON
SCOPE ITEMS MENTIONED. MATERIAL ALUMINUM C/S THICKNESS N/A

TEST DETAILS

METHOD ☒ FLUORESCENT ☐ VISIBLE
FAMILY BRAND MagnaFlux
PENETRANT 21-67 MINIMUM DWELL TIME 45 MIN. ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED
PENETRANT REMOVER H₂O MINIMUM DRY TIME >10 MIN. BLACK LIGHT S/N 13770 ☐ OUTPUT > 1000 μ W/cm² ☐ AMBIENT < 2 fc
DEVELOPER SKD-52 MINIMUM DWELL TIME 30 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY OTHER
LIGHT METER S/N 1097866 CAL DUE DATE Oct 2015

TEST SURFACE

SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☒ MACHINED ☐ SHOT BLASTED ☐ CLEAN BARE METAL
SURFACE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/50°F ☒ 10°C/50°F TO 52°C/125°F ☐ > 52°C/125°F
RESULTS- ☐ METRIC ☐ IMPERIAL

ITEMS	DESCRIPTION	REMARKS
1	Crosstube Installation, High Fuel W.O. ID 91355	?
2	Crosstube Installation, High Fuel W.O. ID 87340	?
3	Crosstube Ins. High Fuel W.O. ID 85566	?
4	Crosstube's Inst., High Fuel W.O. ID 85567	?

Item 1, 2, 3, 4 have pitting, indications.

Item 1, 2, 3, 4, Find Pitting, Indications, waiting for approval from Engineer

M/13-04/02

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE Andy Sheldon PRINT ASheldon SIGNATURE
TECHNICIAN (SIGNATURE): Alexandre Michaux DTR # E-120396
NAME (PRINT): Alexandre Michaux REPORT REVIEWED BY:
CGSB LEVEL 2 1ST TECHNICIAN CGSB LEVEL 2 2ND TECHNICIAN
CGSB REG. NO. 70148 CGSB REG. NO. 70148

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

Eric Downing

From: Patrick Smith
Sent: Monday, April 01, 2013 1:56 PM
To: Chris Provencal; Eric Downing
Cc: Linda Lacelle; Nigel Forbes
Subject: RE: pics of the cad platted

Thanks Chris,

Eric,
Make comments on the work order and proceed as required.

Pat

From: Chris Provencal
Sent: April-01-13 1:55 PM
To: Patrick Smith
Cc: Linda Lacelle; Eric Downing
Subject: RE: pics of the cad platted

It appears that the indications are from flaws in the CAD plating process, caused by the fact the tube was CAD platted twice. We don't see any CAD flaking off, so I can accept these tubes.

-Chris

From: Patrick Smith
Sent: Monday, April 01, 2013 12:50 PM
To: Chris Provencal
Cc: Linda Lacelle
Subject: FW: pics of the cad platted

Chris,

Here is the response from Cadorath,

Please notify us on your decision.

Pat

From: Linda Lacelle
Sent: April-01-13 12:18 PM
To: Patrick Smith
Cc: Eric Downing
Subject: Re: pics of the cad platted

Im not in today. I just need to know if these are good
So we can proceed with painting

Sent from my iPhone

On 2013-04-01, at 12:17 PM, "Patrick Smith" <psmith@dartaero.com> wrote:

I will come to see you.

Pat

From: Cisco Lindo [<mailto:cisco@cadorath.com>]

Sent: March-28-13 11:41 AM

To: Patrick Smith

Cc: 'chris jones'; 'Ed Balske'; 'Nick Wasylik'

Subject: RE: pics of the cad platted

Hi Patrick

We did not notice anything different with these after we did the chromate. Only the ends were stripped on these. We plated over the existing cad when they came back for the replating. Are the photos taken at MPI?

The cad deposit is higher than normal because of the plating over the existing deposit therefore it will show as a much courser finish than normal.

Are there any blisters on any of them? Is the cad flaking off?

Thanks

<image002.gif> **Francisco**

Lindo

Production

Cadorath Specialty -

Strength Through Diversity
Serving industries that better the world

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Cadorath News

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From: Patrick Smith [<mailto:psmith@dartaero.com>]

Sent: Thursday, March 28, 2013 9:17 AM

To: chris jones

Cc: cisco@cadorath.com; Linda Lacelle; Nigel Forbes; Eric Downing

Subject: FW: pics of the cad platted

Importance: High

Hi Chris,

I hope all is well.

We have some concerns with the finish of the last batch of tubes we received.

These are the tubes which were stripped, sent back to Dart, ground, sent to Cadorth for a second cadmium coating.

Pat

From: Eric Downing
Sent: March-28-13 6:59 AM
To: Patrick Smith
Subject: pics of the cad plated

These are all the pics I have about the cross tubes

Eric Downing
QC Corrdinator
T: 1-613-632-5200 ext 223
C:1-613-363-9375
F: 1-613-632-5246
www.dartaero.com
Edowning@Dartaero.com
<image001.jpg>

5.0 PARTS LIST

Qty	Qty	Part Number	Description
X	-201	D350-748-101	CROSSTUBE INSTALLATION, AS 350/355 HIGH FWD
X	X	D350-748-201	CROSSTUBE INSTALLATION, AS 350/355 HIGH AFT
		D350-748-141	CROSSTUBE ASSEMBLY, AS 350/355 HIGH FWD
	1	D350-748-241	CROSSTUBE ASSEMBLY, AS 350/355 HIGH AFT
*2	*2	D3502-1	SUPPORT
*2	*2	D2856-400-710	ABRASION STRIP
*1	*1	AELS-1032-225	INSERT
*2	*2	MS21920-20	CLAMP
*1	*1	MS27039-1-10	SCREW
*1	*1	AN960JD10	WASHER
4	4	D3500-1	SADDLE
16	16	D3501-1	BUSHING
16	16	AN4-6A	BOLT
8	8	AN4-41A	BOLT
4	4	AN5-32A	BOLT
32	32	AN960JD416	WASHER
8	8	AN960JD516	WASHER
24	24	MS21042L4	NUT (OR MS21042-4)
4	4	MS21042L5	NUT (OR MS21042-5)

* REFERENCE ONLY. PARTS ARE INCLUDED IN D350-748-141/241 ASSEMBLIES ABOVE

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Revision: **B**
Date: 07.06.15